B. Substantial Barriers To Entry Are Currently In Place and Will Continue For the Near Future to Prevent New Competitive Entrants From Effectively Competing With Duopoly Cellular Carriers Within Each Market

The CPUC identified three types of entry barriers in its petition: legal, technical and economic. Specifically, we stated that the primary legal barrier to entry -- FCC licensing -- has been high despite the FCC's ongoing efforts to reduce it. The CPUC also argued that the technical, economic and other legal barriers are relatively low and that new entrants will be able to overcome them.[30]

The carriers casually dismiss these barriers, and thus fail to adequately account for them in considering the current cellular market structure and the market structure that is likely to persist during the 18 month period of our request for continued regulatory authority.

1. Legal Barriers Have Deterred Entry By Competitors

The duopoly carriers make two claims concerning legal barriers to entry: (1) legal barriers to entry are not of the cellular carriers' making, so they should not be considered in determining the regulatory treatment of cellular carriers,[31] and

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30. As we stated in our petition, technical and economic barriers are "obstacles" and "impediments" to emphasize that the cellular carriers can overcome them. Petition at 65-75.

31. CCAC, Appendix A at 9.

(2) legal barriers to entry do not exist.[32]

The fact that legal barriers to entry are not of the cellular carriers' making is irrelevant to the appropriate regulatory treatment of the cellular industry. The purpose of extended authority to regulate rates is to remedy the effects of restricted entry, regardless of the cause. According to CCAC's logic, if the FCC had initially licensed only one carrier in each market, the monopolist should not be regulated because its monopoly was not of its making.

In the CPUC's petition, we recognize the FCC's ongoing efforts to allow entry to the wireless telephone industry. Petition at 68. Indeed, many of the carriers recognize that the requirement of an FCC license to use spectrum has been a barrier to entry. Nevertheless, AirTouch's consultant makes the baffling assertion that legal barriers to entry do not exist because a lone entrant (i.e., Nextel) has nearly managed to enter the California market.[33]

The CPUC knows of no example of carriers providing service without a license to use spectrum allocated for that purpose by the FCC, nor do we know of any cases where a cellular carrier has converted its spectrum to use for wireless service without the approval of the FCC. If there were no barriers to entry, the CPUC would expect that lower valued uses of spectrum would be converted to the higher valued cellular use until their values

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32. AirTouch, Appendix E at 21.

33. AirTouch, Appendix E at 21.

were approximately equal. That has not happened. The contention that there are no legal barriers to entry has absolutely no merit.

We agree with McCaw's consultant, Owen, who points out that PCS licenses have value because there are more companies that want to enter the wireless market than, as a legal matter, there are available PCS licenses.[34]

2. Technical and Economic Barriers Have Deterred Entry By Competitors

The CPUC's petition emphasized that the technical and economic barriers to entry for PCS and ESMR will not prevent carriers from entering this industry, but will mean that they will not be able to compete immediately with the cellular duopolists. Many of the carriers, however, persist in ignoring the indisputable fact that entry into the wireless market is not simultaneous with acquisition of spectrum and that creation of a geographically dispersed network is a precondition of market entry that will take several months and substantial resources.

Some of the duopoly carriers argue that the CPUC was incorrect in observing the obvious technical barriers to entry, and that this implied a naive vision of the future wireless market. No party, however, disputed the existence of economies of scale and scope in offering cellular service which have been

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34. McCaw, Exhibit A at 19.

verified by FCC research. [35] According to standard economic theory, economies of scale and scope are considered barriers to entry.[36] The CPUC expects well-funded entrants to be able to overcome these relatively low barriers in time and will not require further rate regulation.

The carriers also take issue with one area in which the CPUC observed that carriers may have been attempting to deter entry: contract discount plans. This observation was not based on speculation or the observation of any competitor, but on a cellular carrier itself. Specifically, LACTC claimed that its contract plans were "designed ... to counter Nextel by encouraging long-term commitments by end users to L.A. Cellular."[37] As long as the incumbent cellular carriers enjoyed a protected market with stiff legal barriers to entry, cellular carriers had little incentive to attempt to deter entry. However, as these barriers have begun to erode, that incentive has increased.

AirTouch would have the FCC believe that the CPUC is "anti-consumer" merely because we suggest that carriers use contract

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35. Federal Communications Commission, Putting it All Together: The Cost Structure of Personal Communications Services, November, 1992 at 27, 43.

36. Robert Pindyck and Daniel Rubinfeld, Microeconomics 1989, pp. 349-350.

37. Los Angeles Cellular Telephone Company, Response to Protest to Advice Letter 370, June 3, 1993, pp. 4-5.
Moreover, given the lack of technical interoperability between Nextel's ESMR service and cellular service, customers locked into long term cellular contracts are far less likely to switch to ESMR service even after their contract terminates.

plans as one way to lock in customers for long periods of time, something the carriers have admitted in correspondence with the CPUC.[38] AirTouch acknowledges in its opposition that the CPUC's April 1993 refinement of our regulatory program led both AirTouch's Los Angeles affiliate and its competitor to finally lower their rates in the months that followed.[39] The CPUC questions AirTouch's claim that it also lowered prices in response to the imminent threat at that time from Nextel, a threat which has yet to materialize.[40] The CPUC suggests that the prevalence of contract plans in other states is merely evidence that these plans are a standard feature of the cellular industry, not that they necessarily are in the best interests of consumers. If contract plans are a response to Nextel, why do

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38. As noted in our petition, LACTC justified the need for a temporary tariff reduction which became final by telling the CPUC:

> L.A. Cellular is faced with the imminent arrival of Fleet Call, aka Nextel, in its market. Being unregulated, Nextel is in a position to bid, secretly and on a customer-specific basis, for individual month-to-month end user accounts on the L.A. Cellular system. Advice Letter 370 is designed in part to counter Nextel by encouraging long-term commitments by end users to L.A. Cellular service.

(June 3, 1993 letter from David Wilson, Attorney for LACTC, to John Leutza, Chief, Telecommunications Branch, CPUC Advisory and Compliance Division.)

39. Airtouch at 49.

40. As noted above, as of earlier this month, Nextel still refers potential customers who desire cellular-like service to cellular duopoly carriers.

they exist in other states where ESMR is not the immediate threat which the duopoly carriers would have the FCC believe?

Finally, the carriers have misconstrued the CPUC's analysis regarding PCS license value and entry barriers. In fact, the CPUC has stated that the barrier to entry is the inability to acquire a cellular license because only two are awarded in each FCC-defined market. The value paid for a PCS license is not itself a barrier, but an indicator that barriers exist. Thus, the inability to obtain a license, and not the value of the license, constitutes the barrier to entry.

C. Interlocking Ownership Interests Deter The Incentive to Vigorously Compete

In our petition, the CPUC cited the fact that in California, cellular markets are dominated by a handful of providers who are partners in one market and competitors in another. This pattern is widespread in California cellular markets. For example, in the Los Angeles market, AirTouch and McCaw are competitors. Yet, in the San Francisco market, these same companies are partners, with each holding a 47 percent interest in BACTC. In our petition, we identify numerous others examples of such interlocking arrangements.

The substantial financial interests which cellular companies have in each other in one market necessarily weakens the incentive for these companies to be vigorous competitors in other markets. For example, AirTouch (operating as LASMSA) and McCaw (operating as LACTC) charge either identical or near identical

prices for cellular services offered on both their discount and basic plans.[41]

In its filing before the United States District Court for the District of Columbia entitled, Memorandum of the United States in Response to the Bell Companies' Motions for Generic Wireless Waivers, the DOJ likewise cited, as part of its market analysis, the overlapping alliances between cellular companies as further evidence that cellular markets are not currently competitive. See App. D. Specifically, while citing the AirTouch/McCaw example in California, the DOJ noted that, "the noncompetitiveness of two-firm markets is exacerbated here by the overlapping alliances of the cellular carriers, so that firms that 'compete' with each other in one market are partners in another." [42]

Several carriers contend that interlocking ownership arrangements should only be considered detrimental to competition if there is proof of explicit collusion in fixing prices or output.[43] However, the CPUC does not claim that such arrangements are collusive, nor must the CPUC make such claim. The CPUC cites these arrangements as further evidence, combined with earnings, pricing, and other evidence, which demonstrates that effective competition between cellular carriers is currently

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41. The only difference in prices appears in high volume and multi-unit customer plans.

42. Memorandum at 14-15.

43. BACTC at 10-11; McCaw at 41, n.104.

absent from California cellular markets. Based on all of this evidence, including interlocking ownership arrangements, the CPUC has found that market conditions are not yet adequate to ensure just and reasonable rates for California consumers of cellular services, the standard set forth in the Budget Act which the CPUC has satisfied. The carriers' argument is simply an attempt to apply a more stringent, antitrust standard by which to defeat the CPUC petition for having failed to meet such standard. The FCC should reject the carriers' argument.

D. The Only Relevant Capacity To Consider When Determining Market Concentration In Today's Cellular Market Is The Cellular Duopolists' and Nextel's Capacity

1. Market Share Of Cellular Carriers Evidences Market Power

In our petition the CPUC shows that the current and future market share of the duopoly cellular carriers indicates that they have market power today, but that this market power likely will diminish over time as new entry occurs. The duopoly carriers nevertheless claim that the CPUC looked at the wrong measurement of market share and that it misinterpreted the significance of market share. The CPUC did neither.

In the CPUC's recent cellular proceeding (I.93-12-007) the Cellular Carriers Association of California ("CCAC") itself introduced the DOJ Merger Guidelines for analyzing market

concentration in the cellular industry.[44] The CPUC agreed with CCAC and incorporated the DOJ's Merger Guidelines as the basis for its analysis of market share. Moreover, the CPUC's reliance on these guidelines, which assess market share and market concentration as an indication of market power, is in accord with the FCC's own recent use of such guidelines [45] in analyzing wireless markets.[46]

Several parties observe that the Merger Guidelines allow for the consideration of capacity as a measure of market share as an alternative to sales.[47] However, these same parties incorrectly apply the DOJ's rules for considering capacity as a measure of market share. The DOJ is very explicit on the appropriate use of capacity in evaluating market concentration. The DOJ considers the capacity of firms not currently participating in the market, "uncommitted entrants," relevant only if two conditions are met: (1) effective capacity can be utilized quickly, and (2) effective capacity can be used without substantial sunk costs. PCS meets neither condition, while EMSR, i.e., Nextel, may.

Specifically, the Merger Guidelines indicate that supply responses "must be likely to occur within one year and without

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44. CCAC Comments at 33-35 in CPUC I.93-12-007.

45. In the Matter of Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Third Report and Order , slip op. at 27.

46. Merger Guidelines at 6.

47. McCaw, Owen at 15; CCAC, Charles River Associates at 7.

the expenditure of significant sunk costs." (Sections 1.32, 20) The DOJ defines sunk costs as:

> the acquisition costs of tangible and intangible assets that cannot be recovered through the redeployment of these assets outside the relevant market, i.e., costs uniquely incurred to supply the relevant product and geographic market. Examples of sunk costs may include market-specific investments in production facilities, technologies, marketing (including product acceptance), research and development, regulatory approvals, and testing. (Merger Guidelines, §1.32)

Under these guidelines, it is clear that PCS capacity cannot be employed quickly or without significant sunk costs, as defined by the DOJ. PCS operators must incur costs in acquiring a PCS license and developing a transmission network. The discussion by Charles River Associates on behalf of several carriers of the potential market shares for substitute wireless suppliers reinforces the view that there is currently no effective competition for cellular service.

Charles River Associates nevertheless argues that "the capacity that new entrants would be likely to bring into service in less than one year without significant sunk cost" should be included in calculating wireless market concentration.[48] However, no wireless provider, other than the duopoly cellular carriers, is in a position to put any new capacity on the market

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48. CCAC, Charles River Associates at 5.

in less than a year unless it does incur significant sunk costs, as defined by DOJ.[49]

2. The Merger Guidelines Are Appropriately Used to Analyze The Competitiveness Of Existing Industries

Unhappy with the results produced by the Merger Guidelines, some of carriers argue that these are inappropriate because: (1) they are intended to analyze mergers, not the appropriate regulatory treatment for existing industries[50] ; (2) they do not take into account the cellular industry's "performance" which makes it immune to the exercise of market power ;[51] and (3) they do not focus on competitive conditions on the margin.[52] We will address each of these concerns and demonstrate that the carriers' analysis shares a common flaw, discussed previously, of failing to acknowledge that entry is not simultaneous with

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49. To be sure, as Charles River Associates itself acknowledges, in reference to forecast by the Personal Communications Industry Association for PCS growth rates, that a growth rate for PCS of 3 percent by 1998 "would imply an extremely rapid rate of expansion." Id. at 6 n. 19. Even under this very optimistic scenario, Charles River Associates admits that PCS at best might be a competitive force in 1998. Charles River Associates thus confirms the CPUC's analysis that competition for cellular services by providers of services which are close substitutes is neither present today nor likely to be in place for the near future. For this reason, the CPUC has adopted a regulatory framework designed to open access to the cellular network so that wireless competition can begin today. We expect that close substitutes will offer effective competition within the next eighteen months.

50. McCaw, Owen at 6.

51. GTE Mobilenet, Attachment A at 10-11.

52. AirTouch, Appendix E at 23.

acquisition of spectrum and that effective capacity does not consist solely of spectrum allocation.

The Herfindahl-Hirschman Index ("HHI") is calculated by summing the squares of the individual market shares of the participants. The HHI reflects the distribution of market share among firms and the composition of the entire market. Market shares are typically based on shares of total sales or output, but according to the Merger Guidelines capacity shares may also be used. The Merger Guidelines characterize markets with an HHI below 1000 as unconcentrated, between 1000 and 1800 as moderately concentrated, and over 1800 as highly concentrated. The CPUC estimated future HHI using projected penetration levels in the wireless mobile telephone market, and found that the market for cellular services are, and will remain, highly concentrated and thus enable the cellular carriers to exercise undue market power.[53] The CPUC also conducted this analysis for the existing cellular carriers plus one ESMR provider (i.e., Nextel), and found that the HHI index is 3750. See App. I.

Owen, on behalf of McCaw Communications, departs from the position of CCAC and argues that the appropriate measure of a highly concentrated market is not the HHI index value of 1800 of the Merger Guidelines, but instead is the HHI value of 2500, employed by the DOJ in its assessment of oil pipeline markets.[54] As noted previously, the FCC has found the Merger Guidelines

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53. Petition at 75-78.

54. McCaw, Owen at 7.

appropriate for analyzing CMRS markets. While we do not endorse this stiffer standard, even under that standard, at an HHI index value of 3750 California's wireless telephone industry would still be considered highly concentrated. See App. I.

Owen also questions the appropriateness of the HHI thresholds in the Merger Guidelines on the ground that they are not empirically based. However, empirical economic literature demonstrates that concentration is positively related to price.[55] By any measure that Owen has been able to devise, California's cellular markets still remain highly concentrated.

3. Characteristics of the Wireless Market Make the Merger Guidelines' Market Concentration Analysis Appropriate

Contrary to the cellular industry's contention, there is nothing unique about the industry which makes it immune to a standard analysis of market concentration. Charles River Associates for CTIA and GTE Mobilenet claim that certain characteristics of the cellular markets make coordination on price and output less likely than in other market with a similar structure, i.e., two firms. CRA identifies six characteristics which make coordination less likely: (1) service variability, (2) declining elasticity, (3) varying learning curves, (4) aggressive pricing from newcomers, (5) high fixed costs, and (6)

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55. McCaw, Owen at 7.

service packaging variability.[56] This analysis is seriously flawed for numerous reasons.

First, variability in services or the packaging of services, more commonly known as product differentiation, is not inconsistent with the exercise of market power. (It may violate the assumptions underlying certain theories of oligopoly, but this is irrelevant.) Second, while Charles River Associates claims that declining elasticity of demand "certainly characterize[s] the provision of cellular services," it provides no empirical support for this claim. Third, the varying learning curves argument makes little sense in the cellular industry where equipment manufacturers, rather than the carriers themselves, generate technical innovation. (This argument is generally applied to industries such as semiconductors where the innovator may price aggressively as one of the market participants.) Fourth, while aggressive pricing is one strategy a newcomer may employ, it is not the only one. For example, Nextel plans to price at the same levels as cellular carriers in Los Angeles.[57] Furthermore, the newcomer mentioned, PCS, does not yet exist, so its pricing behavior is a matter of speculation. Fifth, high fixed costs may support the conclusion that supracompetitive

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56. GTE Mobilenet, Attachment A,"Concentration, Competition and Performance in the Mobile Telecommunications Services Market" Stanley Besen, Charles River Associates, 1994, at 10-11.

57. New York Times, August 30, 1994.

prices are the expected outcome of a duopoly.[58] The argument by Charles River Associates about the uniqueness of the cellular industry is based entirely on economic theory; however, it never specifies which theory of oligopoly it believes describes the cellular industry nor does it provide any evidence to support any of its theoretical assertions.

In the end, the analysis by Charles River Associates of the HHI for the cellular market confirms the CPUC's conclusion that the cellular market today is highly concentrated. While Charles River Associates attempts to show through its four scenarios that the wireless market will be much less concentrated once the new wireless providers are fully functional, its analysis in fact highlights how concentrated the cellular market is today, and what it would take for the market to become less concentrated. In the first two scenarios, Charles River Associates assumes that there will be no consolidation among PCS or with other wireless providers, an assumption that flies in the face of the current industry trend toward mergers and alliances. Charles River Associates also assumes that a company's bandwidth allocation perfectly reflects that company's market share. However, it is not only conceivable but quite likely that a company may have a larger market share than its bandwidth allocation.

In the last two scenarios, which likewise do not reflect the more realistic assumption of some consolidation in PCS licenses,

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58. Kreps and Scheinkman,"Quality Precommitment and Bertrand Competition Yield Cournot Outcomes," The Bell Journal of Economics (1983), at 326-327.

Charles River Associates in fact defines a market that is still highly concentrated. That fact highlights the market power that the duopoly cellular carriers have and will continue to have in the future even after PCS and ESMR providers are operational.

In short, exclusive focus by the cellular duopolists on bandwidth as a measure of wireless capacity is seriously flawed because it fails to recognize that in addition to bandwidth, an infrastructure for transporting information and geographic coverage are critical elements of wireless capacity. Bensen and Burnett of Charles River Associates admit, "For mobile services, however, a carrier's effective capacity is not necessarily measured solely by the amount of bandwidth assigned to it. What is important is how that bandwidth, an input, can be converted into usable output, the information it can carry."[59] Yet despite this admission, Bensen and Burnett focus only on restrictions faced by cellular carriers who must continue to provide analog service in the immediate future, not the immediate limitations of PCS providers, who must build a radio transmission system which will not instantly have wide geographic coverage. By focusing only on bandwidth, the duopoly carriers completely disregard the time it will take for PCS to develop an infrastructure for converting bandwidth to service covering a broad area.

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59. CTIA, Charles River Associates, December 8, 1993, at 36.

4. The Merger Guidelines Properly Focus on Competitive Conditions on the Margin

Hausman argues that market share is an inappropriate measure of market power because, "competition takes place at the margin. It is competition for new customers that sets prices in a market so that looking at overall market shares when new entry has occurred is incorrect."[60] Ignoring Hausman's curious assumption that existing cellular customers are somehow captive and impervious to competitive alternatives, market share is important even on the margin. First, the DOJ Merger Guidelines allowance for considering available capacity recognizes imminent entry. Second, market share by any measurement incorporates advantages of incumbency. For example, if economies of scale are present, as in the case of PCS, incumbents will have cost advantages on the margin.

In short, the carriers have spent a great deal of effort attempting to convince the FCC that the presence of only two firms in the market does not mean that the market is concentrated. To prove this, they have urged regulators to look at capacity unduly narrowly in terms of bandwidth, neglecting that bandwidth cannot truly be considered capacity without some means of delivering wireless telecommunications through it. Accordingly, their analysis is seriously flawed.

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60. AirTouch, Appendix E at 23.

E. Using Well-Accepted Methodology, Duopoly Carriers Are Earning Extraordinary Rates of Return Which Are Not Commensurate With Returns Earned In A Competitive Marketplace

As explained in the CPUC petition, if a cellular carrier earns returns on its investment that are consistently above levels expected in an effectively competitive market, that evidence is an indication of market power by the carrier.[61] Our analysis found that the returns earned by carriers in the largest metropolitan areas representing the majority of California consumers have been consistently high in the five years beginning in 1989. These five year returns ranged from 18.7 percent to as high as 56.2 percent in these markets.[62]

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61. Petition at 47.

62. AirTouch selectively chooses returns from one of the carriers in each of three markets to "prove" that rates of return earned by each are reasonable. AirTouch completely ignores the fact that the returns earned between 1989-1993 by those cellular carriers in major metropolitan markets in California ranged as high as 56 percent. AirTouch itself earned an average 28.3 percent annual return for the last five years in the San Diego area, even though this was a period of severe economic recession in California. And AirTouch is forced to concede, although it does so in a footnote, that in Los Angeles, LACTC has a "significantly higher calculated rate of return" (i.e., after-tax at 56.2 percent for the last five years) than LASMSA, but casually dismisses this difference by claiming the former is more efficient than the latter. It is simply not credible to conclude that LACTC's supposed efficiency, even if true, translates into a near 2000 basis point increase in return compared to LASMSA.

GTE Mobilenet also complains that the CPUC looked only at returns earned by cellular carriers in the largest or major metropolitan markets. Apparently, it believes that smaller markets, where substantially fewer cellular customers reside, are most representative of cellular carrier earnings. Furthermore,

(Footnote continues on next page)

In order to get around the fact that they have consistently earned supracompetitive returns, the cellular carriers attempt either to ignore these returns or improperly to adjust them. First, they assert that the CPUC inappropriately relied on accounting rates of return instead of "economic rates of return", notwithstanding that federal regulators and the investment community have relied on the former. Second, they ignore or misinterpret evidence of cellular carrier market power provided by Q-ratio analysis. Third, they criticize the CPUC for failing to factor in scarce spectrum value to downwardly adjust the accounting rates of return, but, with the exception of LACTC (which managed to reduce its 56.2 percent average five year return by 5000 basis points) they could not explain how to value this factor. The reason is clear: any such adjustment is highly speculative.

(Footnote continued from previous page)

cellular service has only been available in rural areas for a few years. Of course, one would expect in areas with lower demand and fewer customers that returns would be lower, and in fact, generally are.

1. Use of Accounting Rates of Return Is Appropriate to Measure the Earnings of Cellular Carriers

In our petition the CPUC asserts that the rates of return earned by cellular carriers in California are far above rates of return in competitive markets.[63] As evidence of this, the CPUC provided after-tax rates of return on net plant, calculated from carrier-audited data provided in the carriers' annual reports to the CPUC.[64] See App. L.

The average rates of return of the six cellular carriers in the three major markets in California are extraordinarily high by any standard. During the five-year study period these six carriers experienced returns on net plant that averaged 30.9 percent. During these same five years the average return on net worth for the firms in Value Line's Telecommunications Services Industry group was 13.9 percent. Thus, these cellular carriers are earning rates of return more than twice as high as those earned by the average firm in the telecommunications industry. Put differently, these cellular firms experienced rates of return that were 1,700 basis points higher than the returns earned by the average telecommunications industry firm -- in a field where long-term differences of 200 basis points are considered substantial differences in rates of return.

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63. These high rates of returns should drop once effective competition emerges.

64. Petition at Appendix F.

Moreover, these returns are understated. The actual return on equity earned by partners would be even higher than the reported return on net plant to the extent investments are financed with leveraged capital.

Some of the duopoly carriers claim that evidence of earnings is uncompelling because of supposed flaws in the accounting rate of return as a measure of "true" economic rate of return. In CCAC's opposition, Charles River Associates cites in support of this contention the article by Franklin M. Fisher and John J. McGowan, "On the Misuse of Accounting Rates of Return to Infer Monopoly Profits," American Economic Review, 73 (March 1983). The central thesis of this article is the claim that "accounting rates of return, even if properly and consistently measured, provide almost no information about economic rates of return." Much of the article is devoted to describing circumstances under which different firms earning the same economic rate of return can have different accounting rates of return.

This article, however, has been subject to serious criticism raised by several reply articles in the June issue of the same journal. We will cite a few of these criticisms.

In "The Misuse of Accounting Rates of Return: Comment", American Economic Review, 74 (June, 1984), William F. Long and David J. Ravenscraft state:

> Aside from the questionable focus, the authors have little basis for reaching their conclusion, especially in regards to the profit-concentration issue. First, F-M (Fisher and McGowan) do not always perform the calculations correctly. Second, they base their entire analysis on a measure of the profit rate which is not the one preferred in profit-concentration studies. Third, their

> examples tend to represent extreme cases; they do not reflect the typical U.S. industrial experience. Fourth, they do not demonstrate that the use of accounting rates of return leads to a positive bias in the profit-concentration relationship. And finally, they ignore substantial evidence that accounting profits do, on average, yield important insights into economic performance.[65]

Long and Ravenscraft go on to criticize the general method underlying the Fisher-McGowan article, stating "The fundamental problem is that F-M try to reach general conclusions about statistical relationships through examples. Such an attempt is fundamentally flawed, since the examples may only reflect extremes." Instead, Long and Ravenscraft cite the following statistical evidence:

> Work by Thomas Stauffer (1971) sheds some light on these issues. He estimated economic profit for nine industries in which large differences between accounting and economic profits were likely. These were industries with a substantial amount of long-lived assets, R&D expenditures, advertising expenditures, or other special features such as capitalized sales. Despite this special selection, the correlation between accounting and economic rates of return was .79. If one could extend this work to all industries, the correlation would presumably be significantly higher.[66]

Long and Ravenscraft also cite more general evidence of the usefulness of data on accounting profit, stating:

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65. American Economic Review, June 1984, at 494. See App. E for all articles from this journal.

66. Id. at 497.

> A sizable literature exists relating accounting profit to stock market values. After an extensive review of this literature, William Beaver (1981) concluded that almost all studies show a significant positive relationship between accounting earnings changes and stock market price changes ... Assuming that the stock market reflects knowledge of economic profits, accounting profits must do the same, at least to some degree, if investors consider them useful.[67]

In a similar vein, they point out that:

> The broad use of accounting profit data in the private sector suggests that F-M's general conclusions about the uselessness of the data must be wrong. They are certainly valuable by a simple market test -- private firms spend vast resources collecting and analyzing them. A large number of commercial information services (Dun and Bradstreet, Moodys, Value Line, Standard and Poors, COMPUSTAT, etc.) supply data on accounting profit rates and/or comparative analyses across firms or industries.[68]

Others have also criticized the methods and conclusions of Fisher-McGowan. For example, in "The Misuse of Accounting Rates of Return: Comment," American Economic Review, 74 (June, 1984), Stephen Martin states that "Fisher and McGowan cannot establish that what they call the economic rate of return is the unique correct measure of profitability for purposes of economic analysis."[69]

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67. Id. at 499.

68. Ibid.

69. Id. at 504.

Indeed, Fisher-McGowan themselves acknowledge the impracticality of measuring or using economic rates of return. "The economic rate of return is difficult -- perhaps impossible -- to compute for entire firms. Doing so requires information about both the past and the future which outside observers do not have, if it exists at all."[70]

In sum, Fisher-McGowan's analysis is seriously flawed and does not justify the abandonment of measures of profitability that have been calculated, recorded, and refined for decades. While their basis for a profitability measure may be more theoretically correct, as a practical matter, and by their own admission, such measure may be impossible to compute and is based on information that may not exist at all.

Charles River Associates also attempts to create the impression that the accounting rate of return offers no useful information regarding a company's long-run profitability. Charles River Associates advocates the use of an economic rate of return that includes the opportunity cost of the cellular spectrum. According to economic literature, the opportunity cost "of an input is the remuneration the input would receive in its best alternative employment."[71] However, there is no opportunity cost for the spectrum because there is no possible alternative

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70. Op. cit. at 90.

71. Nicholson, Walter, Microeconomic Theory, Third Edition, 1985, at 281.

use under the current FCC restrictions. The spectrum allocated to cellular services can only be used for cellular services.

Finally, GTE Mobilenet makes the curious argument that return on net plant is an inappropriate measure of profitability in a period of rapid investment because it fails to take into account the value of this investment.[72] This assessment is clearly wrong. Any investment that carriers have made is reflected in net plant. What is remarkable is that returns on net plant are so high despite rapid investment by the cellular industry. Once again, if anything, return on net plant underestimates long-run profitability during a period of rapid investment.

Some of the duopoly carriers have also attacked the CPUC petition for failing to consider the higher-than-average level of risk allegedly faced by cellular carriers. Hausman, on behalf of AirTouch, claims that, after adjusting typical regulated utility rates of return for the higher level of risk faced by cellular companies, the resulting risk-adjusted cost of capital faced by cellular companies is not significantly below the rates of return we reported for the six companies in California's largest three cellular markets. Hausman, however, overlooks the substantial difference between the risk-adjusted 20.7 percent rate of return he expects for cellular companies and the 30.9 percent average annual rate of return experienced by the largest six cellular companies in California. This substantial excess of actual

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72. GTE Mobilenet at 20-21.